

# The Need of Greater Cooperation Between Engineers and Contractors

BLAIR A. RIETH

President, Indiana Highway Constructors, Inc.  
General Manager, Rieth-Riley Construction Co.  
Goshen, Indiana

When Ben Petty asked me to talk to you on the subject "The Need of Greater Cooperation Between Engineers and Contractors" I readily accepted because I feel there is room for a tremendous improvement in this field. I strongly believe that the public has the right to expect engineers and contractors to work harmoniously together and to cooperate closely to accomplish their goals. It is high time for engineers and contractors to forget the game of "cops and robbers" and instead to approach their problems as members of the same team. Let's not let the public have the same opinion of engineers and contractors as the farmer did who locked up his daughter in her room when he saw a group of engineers start to survey a new road location across his farm. The farmer again locked up his daughter when he saw the contractor's crew approach. When, months later, while he was talking with his neighbor on his front porch, he saw the contractor and the engineer coming up the road making final inspection, he made no effort to protect his daughter. His friend, knowing of his previous actions, asked him if he were not going to lock his daughter in her room, especially when both the contractor and the engineer were approaching. "No," the farmer said, "I will not have to worry. They will be so busy taking advantage of each other that my daughter will be perfectly safe."

## REQUIRING UNNECESSARY WORK

The need of cooperation between engineers and contractors is not one-sided and deserves the attention of both. I can cite some of the problems, but the solution of these problems is indicated in one word in the title of my paper, *cooperation*. While I am an engineer, and most of the construction personnel of our firm are engineers and have been partly schooled and employed at one time or another by highway

departments, I will present this subject from the contractor's viewpoint. Time will not permit me to go into all the ramifications involved in the points I will make; but if you will excuse my abruptness, I will make my remarks straight to the point. I may step on some toes and even stub my own, but I feel that a frank statement on these matters should be made.

There is need of greater cooperation between engineers and contractors in many fields. One field is specifications. One way to improve specifications is to eliminate unnecessary work. Contractors generally are versatile and can build almost anything that engineers can draw on paper, but somebody must pay the bill. It is questionable if the public would feel inclined to pay our bill when they see us standing on our heads, hanging by our toes, and perched high on pedestals rubbing structural concrete that may never be seen again by the human eye after final inspection. It is even more questionable if they would pay our bill for rubbing this concrete if they knew that many of the best authorities on concrete state that rubbing does more harm than good to the surface.

Another place to eliminate unnecessary work is in the finishing of our road shoulders. Thousands of dollars have been needlessly spent on raking and polishing shoulders for acceptance, when such work will be entirely wasted after the first rain. In many cases it is merely a battle to get acceptance before a rain to see whether the contractor or the awarding authority has to do the work all over again.

### FAIR AND CLEAR SPECIFICATIONS

There is likewise need for cooperation between engineers and contractors to make the specifications fair and clear. You are all familiar with the phrase "or as Engineer may direct." As far as a contractor is concerned, it would be just as fair for this phrase to read "or as the Contractor wants to do." Of course this is obviously ridiculous; but if you will consider both phrases, I think you will agree that one is about as ambiguous as the other. There are many phrases in all specifications that could easily be made more clear and fair, but I will take time to cite only this one example.

The engineers and contractors should cooperate to improve the specifications to provide proper payment for items. The public expects to get for what it pays, and the public expects to pay for what it gets. That statement seems very reasonable and logical, but that is not always the case on the job. On a recent project the awarding authority substituted a 9"-7"-9" reinforced concrete slab for a 6" plain slab and paid the contractor 31c per square yard *less*, while the material cost *increased*.

approximately 60c per square yard. Thus the contractor lost approximately 90c per square yard, or about \$500 on a minor change on one item. Surely that is not making proper payment.

Another provision in Indiana State Highway specifications states that the engineer may require the contractor to place top-soil over special filling material for bridge approach and pay for it as special borrow. Now, you engineers know that an average price for top-soil spread in 3" to 4" layers over an embankment is \$3.00 to \$3.50 per cubic yard, and that an average price for special borrow is 60c to 70c per cubic yard; yet the specifications require the contractor to do the work of the first for the price of the second.

Proper pay items should also be provided for removal items such as old pipes, culverts, structures, and even buildings. Today when more of the work is reconstruction of old roads, these removal items are major cost factors.

Indiana State Highway specifications make no provision for rock excavation on pipe structures. In some localities this can be an item that mounts into thousands of dollars. Certainly it would be wise and proper to provide a pay quantity when such excavation is necessary. Dry excavation on roads and bridge structures is likewise a non-pay item, although specifications require that the contractor use it in the embankment, and many times it is necessary to move it several times before it is put in its final position.

An item which has caused considerable injustice on numerous jobs is the provision providing for the road contractor to do the approach grading to a separate bridge contract within the road limits. The road contractor has no opportunity to bid on this work; and as you all know, the average bridge-approach grading is much more expensive to do than the average road grading. If it were desirable to have the road contractor do this work, it would be only fair to allow the contractor to work out an equitable price under an extra work agreement.

Of course we all realize that it is always necessary to make some changes after the contract is awarded. However, when these changes are necessary, it should be possible to work them out on an equitable basis. On a current project, provisions were made in the contract to maintain traffic. During the course of construction the contractor developed a method that appeared to save time and money for the contractor, the state, and, most of all, the travelling public, as well as reducing traffic hazards. The contractor was finally allowed to proceed, but attention was drawn to the fact that contractor would not be reimbursed for materials used outside of the original location specified,

even though it was merely a matter of using materials at one place instead of another.

### PROTECT FREE, COMPETITIVE ENTERPRISE

There are many, many more examples of the need of greater cooperation between engineers and contractors, but time will not permit me to enumerate them. But in conclusion let me mention one more that, in my opinion, is more important than all the others combined. That is the need of cooperation of engineers and contractors and all other interested parties, to promote, perfect, and protect our democratic system of free competitive enterprise. Allow me to read to you a few paragraphs from the editorials in the January and February issues of *Roads and Streets*.

#### SECONDARY HIGHWAYS BY CONTRACT? WHY NOT?

A trend which should cause everyone in road building to stop and think is the trend toward more road construction by force account.

While highway maintenance, like postal service, is a type of continuing work that lends itself to the performance by career people in public service; *not so with construction*. It is against American principle for a state, county or city organization to go into the new-construction business in competition with the private enterpriser.

Most of the time, we venture that it [the force-account method] is not the most efficient or economical way to get a mile of road work done. The [public] organizations involved almost never come clean as to the true costs of the work. When they try to do so their costs are not easily judged, since the various organizations do not have a standardized or unified cost accounting system permitting comparison and evaluation of each other's work between themselves and compared with the results of contractors' efforts.

It is true that city, county and state departments must maintain a year-around organization to perform essential maintenance. But a bureaucracy, like an old-fashioned corset, tends to creep up. The whole matter is a subject for clear and honest thinking, and a constant remembering that the first duty of the highway organization is toward the public and its first yardstick is economy. There is nothing like competition between businessmen—in this instance contractors—to insure economy in road construction and heavy repairs.

#### SOCIALISM OR PRIVATE BUSINESS IN ROAD WORK?

Last month on this page the spotlight was turned on the seemingly growing custom of performing, by public employes (force account), road work which under our American scheme of living should be per-

formed under contract. As a nation we're shelling out billions to bolster world belief in this democratic principle: *the people shall do the business and not the government*. While here at home the various government bodies from federal to township are digging in deeper and deeper.

Since the war our country has spent over twenty billions of dollars to stop communism and socialism and to promote democratic principles in Europe. As recently as last week the congress authorized another five and one-half billions to continue this work under the Marshall Plan. Also last week the congress approved almost sixteen billion dollars for the armed services to protect our democratic system. At the same time this very same government, by its socialistic actions, is undermining this very same democratic system that it is spending billions to protect. It is time to stop playing Blind Man's Bluff, and *look* where we are going.